

Remarks

Application claims 1-35 are pending in the present application.

In the Office Action mailed January 15, 2003, the Examiner objected to a portion of the specification, some of the drawings and application claims 13-15, 18, 22-24, 30, 31, 33 and 34. In addition, the Examiner rejected application claims 1-12, 16, 17, 19-21, 25-29 and 32. Application claim 35 was allowed by the Examiner.

The specification was objected to because "vertical board", on page 5, line 3, was incorrectly numbered "110". Applicant has corrected this typographical error and amended the specification to now read "vertical board 112".

In objecting to the drawings, the Examiner stated that the drawings "do not include the following reference sign(s) mentioned in the description: contact tails 230 (Page 5, Line 5); slot 221 (Page 6, Line 23); PCB 116 (Page 6, line 31)." Applicant respectfully points out that contact tails 230 are shown in FIGS. 2, 4A and 4B. Likewise, PCB 116 is shown in FIG. 1. With respect to slot 221 described in connection with FIG. 2, Applicant has amended the drawing to provide a reference to slot 221.

Applicant has corrected other typographical errors found in the patent application by this amendment. No new matter has been added.

Claims 1-12, 16, 17, 19-21, 25-29 and 32 were rejected by the Examiner under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,322,379 issued to Ortega et al. A close review of the '379 patent, however, reveals that none of the pending application claims are disclosed, taught or even suggested in the '379 patent.

All of the rejected application claims (claims 1 and 19 are independent, with the others dependent thereon) are generally directed to an electrical connector having electrical conductors with each electrical conductor having a compliant portion. One exemplary embodiment of such a compliant portion is referenced by numeral 240 and shown in FIGS. 4A-5. The compliant portion of each electrical conductor, along with other novel structures of the present electrical connector, provide for movement in the X-Y plane, while restricting movement in the Z plane. This is described, for example, on page 8, lines 13-25 of the specification.

By contrast, the '379 patent does not disclose electrical conductors with compliant portions configured to provide movement in the X-Y plane. What the '379 patent in fact discloses is a connector assembly having a header connector 10 and a receptacle 50 (column 5, lines 10-30; FIG. 1A). The receptacle 50 includes a front housing 150, a rear

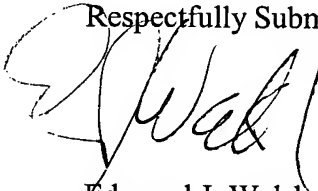
housing 160, signal contacts 55 and ground contacts 57 (column 6, lines 2-29; FIGS. 5B, 6A and 7A). Each signal contact 55 has a pair of arms 51 with flared ends 45, 47 for mating to corresponding pins of the header connector 10, a terminal 53 for mounting to a PCB, and an intermediate portion 54 therebetween that has a square sectional shape (column 6, lines 32-41; FIGS. 6A and 8A). As mentioned throughout the '379 patent, this structure of the header connector 10 and the receptacle 50 allow for "full electrical isolation within the contact engagement zone in a more compact fashion. Moreover, the present invention maintains full isolation in the diagonal direction." (Column 8, lines 61-64).

Simply, the '379 patent neither discloses nor suggests an electrical connector with electrical conductors each having a compliant portion. In fact, given the "square sectional shape" of the intermediate portion 54 of each signal contact 55, the signal contacts 55 of the '379 patent could not provide compliance as described in the present application.

None of the references cited by the Examiner or known to the Applicant discloses, suggests or teaches an electrical connector as claimed in the pending application claims. Therefore, these claims are novel and non-obvious and should be allowed.

The undersigned representative for the Applicant requests the Examiner to call should the Examiner have any questions concerning this amendment.

Respectfully Submitted,



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Version with Markings to Show Changes Made

In the Specification:

Please amend the following specification paragraphs as follows:

Page 5, lines 2-10:

FIG. 1 shows a portion of a matrix assembly 100. Assembly 100 includes a vertical board 112 [110] and a horizontal board 116. A type A connector 110 is mounted to board 112 and a type B connector 114 is mounted to board 116. The connectors 110 and 114 [116], each have numerous signal and ground contact tails 230 that make electrical connection to circuit traces on or within the boards. Additionally, each of the connectors have conducting elements that with mating portions 232 (FIG. 2) and 832 (FIG. 8). The mating portions are positioned so that when the type A connector and the type B connector are mated, numerous circuit paths will be completed between board 112 and board 116.

Page 5, lines 11-14:

In the illustrated example, boards 112 [110] and 116 are conventional printed circuit boards as traditionally found in a matrix assembly. It will be appreciated that only very small portions of the boards are shown. In a commercial implementation, each board would be larger and contain numerous electronic devices.

Page 7, line 32 - page 8, line 2:

The shield plates 250 fit into the cap 124 and are secured with any convenient means. For example, each edge of the shield plates 250 might fit into a slot in a wall of cap 124. However, in the illustrated embodiment, cap 124 has a floor 252 that includes numerous openings. Each shield plate 250 is cut with slits creating fingers 254. Each of the fingers projects through an opening in floor 252, creating a mating surface within the shroud created by the walls 126 of cap 124. In the illustrated embodiment, the shield plates are held firmly to the cap through an interference fit.

Page 8, lines 26-29:

Turning now to FIG. 3, [A] a type A connector 110 is shown in exploded view. The connector contains a plurality of wafers 310. As with wafers 210, wafers 310 include a plurality of signal conductors and a shield 336. A plurality of contact tails 330 extend from a lower surface of the wafers for attachment to printed circuit board 112.

Page 8, lines 30-32:

Wafers 310 are stacked side-by-side, with their major surfaces in parallel. The wafers are secured to housing 118. Attachment features 322 on the wafers 310 engage slots 321 in the housing 118. Likewise, features 320 [321] engage other slots in housing 118.

Page 9, lines 5-13:

The conductors of wafers 310 have mating portions that extend at the forward edge of the wafer. In the preferred embodiment, these mating portions fit within recesses formed in the lower surface 352 of cap 120. As in a traditional connector, the recesses within cap 120 are accessible through openings in the mating face of cap 120. As connector 110 is mated with connector 114, cap 120 fits within the walls of cap 124, bringing the mating contact portions of the conductors from connector 110 into the mating area. The mating portions of the signal conductors from connector 114 pass through the openings in the mating face of cap 120 and make electrical contact with the mating contact portions of the conductors from connector 110.

Page 12, lines 7-9:

Turning to FIG. 6, additional details of features of shield 236 are shown. FIG. 6A shows a contact 234. The contact is stamped into forward portion 434 (see FIG. 4C). A

gap 610 is provided. Slots 612 and 614 are also stamped in the shield, leaving beams 618 and 620.

Page 13, lines 29-33:

Shield 336 also has features stamped and formed in it for making electrical connection. A contact tail 330 [230] is attached to a tab 852. Tab 852 is bent such that when shield 336 is attached to insulator 820, the contact tails 330 [230] of the shield 336 are aligned with the contact tails from the signal contacts. As described above, the contact tails [230] are intended to make electrical connection to signal traces within a printed circuit board.

In the Claims

Please amend claim 35 as follows:

35. (Amended) An electrical connector, adapted for use in a matrix assembly comprising:

- a) a first plurality of wafers, each wafer comprising a column of signal contacts, each signal contact having an intermediate portion, a contact tail, and a mating portion, each of the wafers further having a insulative portion encapsulating the intermediate portions of the signal contacts;
- b) a first housing holding the wafers in parallel with the mating portions held in a first planar array;
- c) a second plurality of wafers, each wafer comprising a column of signal contacts, each signal contact having an intermediate portion, a contact tail, a mating portion and curved portion having at least two opposing curves joining the intermediate portion to the mating portion, each of the wafers further having a insulative portion encapsulating the intermediate portions of the signal contacts and leaving the curved portion un-encapsulated;
- [b]d) a second housing holding the insulative portion of the second plurality of wafers in parallel;

[c]e) a cap connected to the contact portions of the second plurality of wafers, the cap holding the contact portions in a second planar array of dimensions matching the first planar array.